

# **CITY OF COLFAX**

## **REQUIREMENTS AND STANDARDS FOR CLOSED CIRCUIT TELEVISION SEWER LATERAL INSPECTIONS**

### **PURPOSE AND SCOPE**

This document provides information and sets forth standards for sewer lateral closed circuit television (CCTV) inspections and recording. The purpose and scope of this document is to encompass those facets of the CCTV Sewer Lateral Inspection Program pertaining to the performance and quality of the CCTV inspection and recording and to improve the accuracy and quality of the televising activities and preparation of the CCTV inspection report. Specifically, it is for use by CCTV operators and technicians, contractors, plumbers, design engineers, CCTV interpreters, and others who are or may be involved in the CCTV Sewer Lateral Testing Program. This document does not set forth the standards pertaining to sewer lateral testing, repair, or replacement.

### **GENERAL INFORMATION**

1. Prior to performing CCTV inspection, the sewer lateral shall have been cleaned by utilizing the appropriate cleaning method given the inside condition of the sewer lateral. Roots, grease, oil, sediment, or solids shall be removed to permit the visual review and recording of the inside wall of the sewer lateral. The cleaning work is to be performed by a licensed Contractor pursuant to the provisions of Section 7026 of the State of California Business and professions Code.
2. CCTV sewer lateral inspection recordings, hereinafter referred to as "media", shall be in DVD format and shall be in color.
3. Camera, power source, lights, and other components for the video inspection shall be equipment designed and manufactured for the inspection of sewer laterals and piping having a minimum diameter of 3" and for a distance of at least 150 feet from the point of access.
4. Lighting and camera quality shall be suitable to provide a clear, in focus picture of the entire inside periphery of the sewer pipe for all conditions encountered during the work.
5. All recordings shall be in focus, properly illuminated with good contrast, adequate color and tint without distortion or outside interference.
6. The camera lens must be kept clean and clear; any fogging due to oil, grease, or other water content or debris that obscures the lens shall be cleaned off before proceeding with the recording operation. The camera is to be operative in 100% humidity.
7. Sewer lateral CCTV inspection recordings that are to be submitted to the City for review and the eventual issuance of a Building Sewer Lateral Certificate of Compliance are to be performed by contractors who are licensed and experienced to perform CCTV inspections or other inspection service providers and technicians who are permitted by law to perform such inspections. The CCTV inspection media shall show the whole periphery of the pipe. CCTV inspection personnel shall coordinate the work of the CCTV inspection with the property owner or resident to minimize or temporally stop sewer

discharge into the sewer lateral while recording in order to show the whole periphery of the sewer lateral. If a bypass conduit is necessary, it must receive prior approval from the City inspector, and it shall be used as the last alternative.

8. A data view display feature capable of showing on media the following information shall be provided:
  - a. Physical address of property which the sewer lateral serves
  - b. Date and time of inspection
  - c. Name of company, firm or technician performing the CCTV inspection
  - d. Inside diameter of sewer lateral and type of pipe material
  - e. Continuous footage counter accurate within 3 percent
  - f. Identification of access and starting point for video inspection such as upstream cleanout and location of cleanout. Vent lines will not be acceptable as access points.
9. The preferred direction of the video inspection is forward from upstream to downstream.
10. Video televising of the entire length of the sewer lateral is required to the public sewer main. Inability or failure to do so because of obstructions in the line, collapsed pipe, out of alignment joint offsets, or lack of acceptable access points will result in the rejection of the CCTV inspection report. An acceptable access point is defined as a cleanout constructed in accordance with the plumbing code and City of Colfax Standards and it permits the complete video inspection of the sewer lateral. A vent pipe or any portion of the building plumbing is not considered as an acceptable access point. If there are no acceptable access points, installation of new sewer lateral cleanout meeting the requirements of the adopted plumbing code and the City of Colfax Standards will be required in order to perform a video inspection of the sewer lateral. The location of the cleanout shall either be near the building footing at the building plumbing outlet, at the property line, or between the property line and the building footing. If only one cleanout is being provided to facilitate the video detection and it is located at the property line, a double sweep type cleanout shall be provided to facilitate inspection of the building lateral from the new cleanout.
11. The media shall be labeled and the labels shall be typewritten or legibly hand printed and shall include the following information:
  - a. A "CCTV Sewer Lateral Inspection" title
  - b. Street address of the property to which the sewer lateral serves
  - c. Date of inspection
  - d. The name of the Company, Firm, or Individual responsible for the CCTV Inspection and to which payment has been made as reflected on the invoice provided by the inspection service provider to the owner or service requestor.
12. The CCTV inspector or operator shall attempt to identify all illicit connections to the sewer lateral observed in the CCTV inspection such as roof drains, area drains, french drains, swimming pool drains, basement drains, and footing drains by physically

inspecting the property for visible evidence. The findings shall be noted in the CCTV Inspection Report

13. Sewer lateral lengths shall be measured from cleanout to the public sewer main, cleanout to inside of structure and from cleanout to cleanout.

## **SPECIFICATION**

All CCTV data collecting and recording activities shall conform to the minimum requirements set forth in "The CCTV Inspection Standard for Sewer Laterals".

## **THE CCTV INSPECTION STANDARDS FOR SEWER LATERALS**

### **PART 1 – FIELD DATA COLLECTING PRACTICES**

All CCTV inspection and recording practice for sewer laterals will be evaluated against these Standards.

1. All recordings shall be in color with the ability to achieve proper balance of tint and brightness. The loss of color or severe redness due to equipment malfunction may be cause for rejection of the CCTV Inspection Report.
2. All recordings shall be properly focused and illuminated with good contrast, adequate color and tint, without distortion, or outside interference. While moving forward or in the reverse run, the picture shall be of adequate light to clearly ascertain the existence of pipe cracks or fractures and their severity in addition to the obvious features such as joints and additional connections to the lateral.
3. The complete periphery of the sewer lateral shall be visible.
4. The camera operation may be cable pulled or self propelling and may record moving forward or on a reverse pull depending on the pipeline conditions. The preferred direction is forward from upstream to downstream.
5. The camera lens shall be kept clean and clear without fogging due to oil, grease, or other water content or debris that obscures the lens. The lens shall be cleaned before proceeding with the recording operation.
6. The camera shall be moved through the sewer lateral at a uniform rate not exceeding 30 feet per minute. The camera shall be stopped for a minimum of 5 seconds at broken or cracked pipe sections, root intrusion, miss aligned joints, connections to the lateral or other pipe defects. The camera shall be stopped for a full minute at any flowing connections and if necessary, pulled back and re-televised to ensure a clear recording of the connection. Camera units shall have adjustable supports and shall be set so the camera axis is generally at the centerline of the pipe.
7. The operator shall clearly identify the location of all wye or tee connections, taps, breaks, roots, or other defects as outlined in Part 2 of these Standards.
8. The total length of the sewer lateral shall be inspected to the public sewer main. If the entire length of the sewer lateral cannot be inspected because of obstructions, the CCTV

Inspection shall be recorded as a failed inspection. However, the obstruction may be removed and the sewer lateral repaired in accordance with the "Standards for Obtaining a Sewer Lateral Certificate of Compliance Based on Repair or Replacement" and the line re-inspected.

9. The pipe diameter shall be obtained by physical measurement in the upstream (or downstream) cleanout. The pipe material shall be identified.
10. Reverse set ups are to be limited. Potential reverses shall be identified and reported to the City for review. It is intended that the number of reverses are minimized to those absolutely necessary to complete the inspection.

## **PART 2 – CCTV INSPECTION AND REPORTING FORM**

The City CCTV Inspection and Reporting form is to be utilized in reporting and submitting any CCTV inspection recording to the City for review and the subsequent issuance of a Building Sewer Lateral Certificate of Compliance. The CCTV inspection report form can have any number of pages, depending on the number of defects found and it is to provide general information and inspection defects. General information including property address, date, time, operator name, and recording ID shall be provided. A diagram or a drawing showing the street, approximate location of the cleanout(s) and building face is to be provided. The diagram may be drawn on the back of the CCTV Inspection Report or prepared on a separate sheet of paper and attached to the inspection report. Pipe diameter, pipe material, shape of the pipe, pipe length, televised footage, CCTV view direction, usage of reverse setups and comments shall be provided. A sample CCTV Inspection Report form and the sewer defect classification nomenclature table are included in these standards.

## **PART 3 – CCTV RECORDING AND INSPECTION REPORT REVIEW**

1. All CCTV recordings will be reviewed for acceptability of quality based on the minimum standards established and the CCTV Inspection Report will be checked against the visible features shown on the CCTV recording.
2. A CCTV Inspection Report shall be completed in conformance with the standards and appropriate sewer defect nomenclature which best represents the sewer lateral defects found shall be used.
3. In those cases where it is impossible to stop inflow into the sewer lateral during the CCTV inspection and recording because of illicit drainage connections or because the building to which the lateral serves is a facility which must continually use sewer service without interruption or is difficult to control the use of sewer service such as hospitals, care facilities, doctor and dental offices, or a large office, commercial, or industrial complexes, the CCTV inspection is to be performed during off peak usage of the sewer service. Heavy water flows which obscure the viewing of the inside of the sewer lateral will be cause for rejection of the recording. Surcharging and flooding of the camera lens will not be an excusable condition if it has been artificially created by an upstream surcharge. The existence of flow condition where the camera towing bridle is underwater and the sewer line segment is clearly not in a sag condition may result in a determination that the recording conditions are unacceptable.

4. All sewer lateral line segments must be televised complete from cleanout to cleanout, cleanout to public sewer main, and from cleanout to structure entrance on the same recording disk in a continuous run unless a reverse setup is necessary or if the recording time exceeds the capacity of the recording medium.
5. Continuous footage readings for identifying the location of defects must be accurate to within 3 percent tolerance. Defect identifications are to be called out and recorded to the nearest full foot. Any inaccuracy in the continuous footage meter or identified defects or features which cause doubt as to the accuracy of the locations or total length shall render the line segment recording as unacceptable. If the operator has acknowledged that the forward run is unacceptable and has decided to re-televisé on the reverse pass, the operator must ensure that the footage markings are correct and that a stop at each feature for 5 seconds is provided to produce a complete recording inspection in the reverse pass.
6. Any other unidentified defect such as equipment interference or malfunction causing blurred or obscured images that detracts from the ability to completely and with reliable accuracy read the recording shall constitute a basis for rejection.

#### **TYPICAL ADVERSE PIPE CONDITIONS TO BE REPORTED IN THE CCTV INSPECTION REPORT**

- Cracked Pipe (longitudinal, radial, spiral, multiple)
- Broken Pipe, Hole in Pipe, Deformed Pipe, Collapsed Pipe
- Separation in Pipe Joint (roots, earth movement, collapsed pipe section)
- Pipe Obstruction (cause for failed inspection)
- Infiltration (observable, evidence of, seeps into line, runs into line)
- Debris or Sediment in the Pipe (flow undisturbed or disturbed, unable to continue)
- Grease (flow undisturbed or disturbed, unable to continue)
- Scaling (flow undisturbed or disturbed, unable to continue)
- Side Connections (attempt to identify)
- Cleanouts (existing or missing and location)

# **CITY OF COLFAX**

## **STANDARDS FOR OBTAINING A SEWER LATERAL CERTIFICATE OF COMPLIANCE BASED ON REPAIR OR REPLACEMENT OF BUILDING SEWER LATERALS**

### **PURPOSE**

This document sets forth the minimum standards to which sewer laterals will be repaired, replaced, or re-lined for the purpose of obtaining a Sewer Lateral Certificate of Compliance in accordance with the requirements set forth in the City of Colfax Ordinance No.499.

### **GENERAL INFORMATION**

The City of Colfax Ordinance No. 499 requires the cleaning, inspection, and testing of sewer laterals connected to public sewers and serving residential, multi-family residential, commercial or industrial use properties upon the occurrence of stipulated property transfer transactions or events. These transactions or events are:

1. The change of ownership of the property served.
2. The application for a new connection to the sewer collection system,
3. Any repair or replacement of the sewer main to which the lateral is connected.
4. Any repair or replacement of any portion of the property's sewer lateral.
5. A determination by the City of Colfax that the cleaning and testing is required for the protection of public health, safety and welfare.
6. The application for a building permit for a remodel of any structure being served by the sewer lateral where the cost of the remodel work exceeds \$20,000,
7. The application for a change of use on property served from residential to commercial or from non-restaurant commercial to restaurant commercial,
8. The installation of additional plumbing facilities that produce a major increase in sewage flow.

Nothing in the Ordinance prevents such testing, repair or replacement before a change of ownership. The property owner is responsible for the repair or replacement of the building sewer lateral which has been found through testing and inspection to exhibit conditions which would permit excessive infiltration to enter the sewer collection system or excessive exfiltration. The building sewer (Building Sewer Lateral) is defined as that part of the sewer lateral from the building to the public sewer main that is required to be maintained by the property owner in accordance with ordinances adopted by the City.

Upon completion of the repair or replacement of the sewer lateral, re-inspections are to be conducted until the sewer lateral passes the required testing. Excessive infiltration or exfiltration is defined as exceeding the allowable amount as specified herein. Once the sewer lateral has successfully passed the inspection and testing procedure, and paid all fees, the City Engineer or Designated Representative shall execute a Building Sewer Lateral Certificate of Compliance which shall be filed with the City and recorded with the County Recorder of Placer County.

There are two categories of Building Sewer Lateral Certification of Compliance for the continued service of a lateral based upon materials and performance: (1) A 10 year certificate for existing laterals that do not conform to the current material standards for new laterals as established in the plumbing code adopted by the City of Colfax and does not exfiltrate at a rate greater than that established in the exfiltration pressure test for existing laterals (refer to the provisions specified in Specified Pressure Tests of these Standards); (2) A 20 year certificate for existing, existing repaired or existing replaced sewer laterals that meet the current material and testing standards for new laterals as established in the plumbing code adopted by the City of Colfax. For a 20 year certificate, the sewer lateral must be watertight.

An alternative testing and inspection procedure for a 10 year certificate consisting only of a CCTV inspection of the sewer lateral is applicable when there is a qualified change of ownership of the property served and the potential for hydrostatic conditions around the sewer lateral do not exist.

A property owner may apply for a Building Sewer Lateral Certificate of Compliance without inspection when the property owner provides evidence, satisfactory to the City Engineer or Designated Representative, that the sewer lateral has passed an inspection within the past ten (10) years in accordance with the City of Colfax Ordinance 499.

Grounds for immediate expiration of a Certificate of Compliance:

- a. A sewer overflow/spill from a sewer lateral.
- b. Upon a subsequent repair or replacement of any portion of the Building Sewer Lateral.
- c. Upon a determination of the City of Colfax that the cleaning, testing, repair or replacement is required for the protection of the public health, safety, and welfare.

## **STANDARDS FOR REPAIR OR REPLACEMENT OF BUILDING LATERALS**

### **Approved Repair Methods and Materials**

1. Materials used in the repair or replacement of existing sewer laterals which have failed to pass an inspection and/or test shall be made of pipe materials, fittings, couplings, and other joining materials which have been approved for use pursuant to the current edition of the Plumbing Code adopted by the City at the time of the inspection and/or testing, and as modified and specified in these Standards.
2. Sewer Laterals constructed of an approved pipe material which have cracked pipe sections where the pipe has retained its original shape and does not show excessive deflection and is not subjected to hydrostatic pressures either outside or inside the pipe may be repaired with an approved cured in place spot repair lining.
3. Sewer laterals which are subjected to hydrostatic water conditions either inside or outside the pipe and which have not passed a required pressure test, may be repaired with an approved cured in place pipe lining system installed within the entire length of the sewer lateral from the wye at the public sewer main to the sewer lateral cleanout closest to the building footing or replaced in its entirety with approved pipe materials. At

the conclusion of the repair, replacement, or relining the complete sewer lateral must pass specified pressure tests.

4. The replacement of damaged pipe sections with approved materials, fittings, and couplings is only acceptable where the sewer lateral is not subjected to hydrostatic pressures either inside or outside of the pipe unless the complete sewer lateral from the wye at the public sewer main to the cleanout closest to the structure being served can pass the required pressure test after the repairs are complete.
5. Whenever the sewer lateral is repaired, replaced, or re-lined, if not already installed, cleanouts shall be provided to grade to facilitate the inspection and testing at the junction of the building drain and the sewer lateral at a point approved by the City, typically within 2 feet of the structure being served by the lateral, and at or near the property line at a point and in a manner approved by the City if in the public way, or, at a point and in a manner approved by the City if not in the public way and on building property. For that portion of the sewer lateral being repaired, replaced, or re-lined, cleanouts shall also be provided to grade at intervals not to exceed 100 feet in run of a cleaning snake to reach the adjacent run of a cleaning snake, and for each aggregate horizontal change in direction exceeding 135 degrees in accordance with the City of Colfax Standards and the City adopted Plumbing Code.
6. Approved trenchless technologies such as "pipe bursting" may be utilized to replace sewer laterals.
7. Spot repairs consisting of the placement of metal or other sheeting materials and concrete or mortar will not be accepted.
8. Re-mortaring of joints as a repair method is not acceptable without prior approval of the City.
9. Pipe and pipe couplings shall be joined and installed in accordance with the manufacturer's recommendations. Pipe repairs shall be made in a manner which provides the least number of pipe joints.
10. Damaged wyes at the sewer main shall be replaced by the City at property owner expense.

### **Construction within the Public Right of Way**

Construction methods utilized in the public right of way shall conform to the Standards and Specifications adopted by the City and in accordance with the provisions of the encroachment permit issued by the City.

### **Types of Pipe Damage that Must Be Repaired or Pipe Sections Replaced**

1. Where the sewer lateral is not subjected to hydrostatic conditions and the exfiltration test is not required (allowed CCTV Inspection), the pipe repairs must be made for the following pipe conditions:
  - a. A separation or offset in the pipe joint including any fish mouth condition at the joint.
  - b. Holes or cracks in the pipe bell, barrel, or coupling.



- c. For PVC pipe, a deflection in the pipe cross-section exceeding 1/4".
  - d. Failed trench section causing excessive belly or sump condition in a pipe section causing retention of water of one inch or more.
  - e. Root penetration into the pipe.
  - f. Other lateral defects which the manufacturer of the lining system recommends be corrected prior to the placement of the liner.
2. Where the sewer lateral is subjected to hydrostatic conditions and the pipe repair option selected is pipe lining, repairs shall be made to the sewer lateral prior to the installation of the liner and the repair shall correct the following deficiencies:
- a. A separation or offset in the pipe joint including any fish mouth condition at the joint which the lining system cannot bridge based on the liner manufacturer's recommendations.
  - b. Holes in the pipe bell, barrel, or coupling that the lining system cannot bridge.
  - c. For PVC pipe, a deflection in the pipe cross-section exceeding 1/4".
  - d. Failed trench section causing excessive belly or sump condition in a pipe section causing retention of water of one inch or more.
  - e. Root penetration into the pipe.

### **Hydrostatic Pressure Conditions Defined**

1. Hydrostatic pressures exist around the sewer lateral when the lateral is completely or partially submerged by groundwater or exists within the lateral when discharges to the lateral exceeds the capacity of the pipe or is subject to water head.
2. The following circumstances shall be prima facia evidence that the sewer lateral is subject to hydrostatic pressures:
  - a. For commercial or industrial uses, at any time the discharge to the sewer lateral exceeds the following flows for a 3 inch diameter sewer pipe at the indicated slopes or if there exists on the property a plumbing fixture that has the indicated capacity:
    1. 50 gpm w/ slope of 1/4" per foot
    2. 35 gpm w/ slope of 1/8" per foot
  - b. For commercial or industrial uses, at any time the discharge to the sewer lateral exceeds the following flows for a 4 inch diameter sewer pipe at the indicated slopes or if there exists on the property a plumbing fixture that has the indicated capacity:
    1. 100 gpm w/ slope of 1/4" per foot
    2. 75 gpm w/ slope of 1/8" per foot
  - c. For commercial or industrial uses, at any time the discharge to the sewer lateral exceeds the following flows for a 6 inch diameter sewer pipe at the indicated slopes or if there exists on the property a plumbing fixture that has the indicated capacity indicated:
    1. 310 gpm w/ slope of 1/4" per foot

2. 215 gpm w/ slope of 1/8" per foot
- d. Verification from a closed circuit television inspection that clear water is being discharged into the sewer main from the sewer lateral.
- e. Evidence that a basement sewer sump pump is utilized on the property being served.
3. All pressure laterals shall be pressure tested at 1.5 times the operating pressure and no more than a 1% pressure loss shall be detected within a 10 minute test

### **Specified Pressure Tests**

When hydrostatic pressure conditions can exist outside or inside of the sewer lateral at any time, the sewer lateral shall be pressure tested by the exfiltration method by plugging the end of the sewer lateral at its point of connection to the public sewer and completely filling the sewer lateral with water from the lowest to the highest point thereof. To perform a pressure test, the sewer lateral must have a cleanout located near the building footing which is served by the sewer lateral or at the property line. If the cleanout does not exist, one must be installed by a qualified owner/builder or by a licensed contractor under a plumbing permit issued by the City Building Department as part of the test procedure. The contractor or qualified owner may perform preliminary pressure tests prior to completing the backfill operations; however, the final pressure test shall be performed after the completion of the backfill operations. A video inspection of the downstream side of the test plug must be performed during the exfiltration pressure test to confirm that the test plug has sealed.

1. The exfiltration pressure test for a gravity sewer lateral shall be performed with potable or recycled water by filling the sewer lateral to a level 3" below the lowest floor drain or fixture connection to the building drain system up to a maximum water column of 33 feet above the test plug in the lateral at the face of the main or in the lateral wye fitting at the main when a wye fitting exists. If necessary, a stand pipe shall be fitted to the top of the cleanout to achieve the required testing water level. The testing water level shall also be at least higher than the elevation of the back edge of the public sidewalk at the point above the approximate location of the sewer lateral, or the top of curb if there is no public sidewalk or the edge of pavement if there is no curb or public sidewalk. An approved backwater valve and cleanout shall be installed at the property line if there is any gravity drained plumbing fixture in the structure being served that is below the elevation of the back edge of the public sidewalk at the point above the approximate location of the sewer lateral, or the top of curb if there is no public sidewalk or the edge of pavement if there is no curb or public sidewalk. A lateral may be tested in segments subject to the approval of the inspector. When segmental pipe testing is performed, each tested pipe segment must not exceed the allowed leakage rate.
2. The sewer lateral will have passed the pressure test if the testing water level within the testing standpipe does not drop more than the indicated rate for the given diameter of testing standpipe indicated below. The allowed leakage per sewer lateral is 212.5 gpd or 8.85 gph or 0.15 gpm or 34.08 cubic inches per minute.
  - a. 3" Diameter: 5 inches per minute
  - b. 4" Diameter: 2.5 inch per minute
  - c. 6" Diameter: 1.5 inch per minute

END